## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1. Determining the scope and contents of the prior art.
    2. Ascertaining the differences between the prior art and the claims at issue.
    3. Resolving the level of ordinary skill in the pertinent art.
    4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 30 to 34, 38, 39, 40 to 44, 48, and 49 are rejected under 35 U.S.C. 103(a) as being obvious over Travis, et al. (U.S. patent 5,380,007 A) in view of Schlottmann, et al. (U.S. patent 6,824,467 B2).

***4.*** As to Claims 30 and 40: '007 discloses all of the limitations of Claims 30 and 40 but lacks specificity as to the simulation rule data and the physical object data being selected as to yield a pre-selected desired outcome probability of a plurality of possible wagering outcomes. '007 teaches a method of operating a gaming system comprising: storing simulation rule data and physical object data (7:64-8:34), the physical object data defining physical objects (ball locations, for example, 8:5-6), the simulation rule

data defining rules of a simulated world that affect the physical objects (motion equations, 8:5, air speed, 8:11-12); accepting a wager to play a wagering game (coin slot, Fig. 1); based on the physical object data and the simulation rule data, simulating actions of the physical objects within the simulated world to randomly select a simulated outcome from a plurality of possible simulated outcomes according to a predetermined outcome probability distribution (bouncing balls drawn to form game outcome or combination of winning numbers, Abst., Fig. 1); graphically rendering the actions and the simulated outcome; and providing an award if the selected simulated outcome represents a winning condition (Abst., Figs. 1, 6, 8) as selected by the RNG (4:20-25). ‘007 has a wager input device and a display (Fig. 1). As an electronic gaming apparatus, '007 will inherently have memory and a controller. ‘007 teaches that the desired outcome probability distribution is readily apparent and discernible to a player of the wagering game. The examiner points to the four columns in Fig. 1, each containing eleven balls respectively marked 0 to 9 and "Slotto" (Fig. 1, 3:52-54, 4:16-28). The probability distribution is thus readily apparent and discernible to the player since each ball in a respective column will have a one-in-eleven chance of being selected. ‘467, however, teaches the simulation object data and the physical object data being selected to yield a pre-selected outcome probability distribution of a plurality of possible simulated outcomes. This can be done a couple of different ways. Fig. 4 discusses defining the physical parameters of the model; running a Monte Carlo test to determine the probability of each outcome; and evaluating if the distribution of outcomes is satisfactory, and if not altering the model (7:24-44). Fig. 6 discusses defining the

physical parameters of the model; creating a list of allowed initial conditions, and determining via the model the outcome for each set of initial conditions; and evaluating if the distribution of outcomes is satisfactory, and if not altering the model and/or the list of initial conditions (8:26-58). The physical object data are taught in (6:3-12). The simulation rule data are taught in the simulation of quantities such as inclination of play field, friction, shape, size, resiliency, trajectory, velocity, spin, etc. (5:17-42). The teachings of ‘467 would have allowed one of ordinary skill in the art at the time of invention to develop a physical model using an iterative process until an even one-on-eleven distribution was obtained for a column of lottery balls such as depicted in ‘007 (Fig. 1). 467 teaches a predetermined probability distribution of the plurality of possible simulated outcomes being defined by the interaction of the physical object data and the simulation rule data (Abst.). Fig. 4, step 52 and Fig. 6, step 72 would be evaluated using Monte Carlo analysis for the following reasons: because of the possibility of trillions (6:17) or more possible routes for the ball to take, a Monte Carlo analysis is done of all the possible outcomes to assign them a probability (Col. 6) to relieve the burden of evaluating all of the possibilities during game play which would slow down the game. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the predetermined distribution of '467 to the game of ‘007. '467 teaches the possibility of doing these calculations for games involving balls colliding with each other (15:34-60), which is exactly the type of game of ‘007 (Abst.). Additionally, the selection of simulation rule data and physical object data to determine a desired probability distribution ('467, Figs. 4 and 6) can be used for more

complex analyses such as those of a pachinko game (Fig. 8, 9:44-63), which does not have a readily discernible probability distribution such as the lottery ball tubes of '007. The only intuitive aspects of the distribution of the pachinko game of '467 (Fig. 8) is that the ball will be more likely to come down in the left of the play field, with decreasing probabilities the further away from the left side the distance is. The ball of '467 Fig. 8 is more likely to be on the left since it is shot from the right of the play field to the left. This intuitive aspect of the distribution is borne out in '467 Table 14 (Col. 13) which lists the outcomes as slot 4 (59%), slot 1 (35%), slot 2 (5%), and slot 3 (1%). Since the method of '467 can be used for a more complex probability distribution such as pachinko, it would certainly be simple to use it do develop a readily discernible outcome such as the one-in-eleven distribution of the lottery ball columns (Fig. 1) of '007. This obviousness would also apply to even distributions such as roulette (1 in 38, or 1 to 36, 0, and 00) and dice (1 in 6). '467 would also have the advantage of using the simulation rule data and physical object data to select the random outcome instead of using an RNG as in '007 (Fig. 5, step 61, select initial conditions which would be run within the limits determined in steps 51, 52, and 53 of Fig. 4; step 62, run the physical model until the game ends; 63 evaluate outcome; 64 lookup outcome; 65 award player; similar steps in Fig. 7). The advantage of this modification would be to make the simulation more realistic by using a simulation of the actual motion instead of an RNG to generate the random result (each collision of pachinko ball in Figs. 11 & 13 being a separate random event as the pachinko ball goes down the field of play, '467) instead of merely selecting a random number to determine the outcome of the simulation as is done in '007 (5:20-

24). This method of determining paytables by using a Monte Carlo analysis of all possible game outcomes and determining the random outcome using the interaction of physical object data and simulation rule data would also serve to create a verifiable mathematical model which could be independently verified by state gaming authorities or their designated contractors to ensure the fairness of the game. Eliminating the RNG would also serve to deter tampering with the gaming package since the random outcome would be organically determined by the game program as a whole instead of by a discrete RNG (whether in software or firmware), as a simple, stand-alone RNG would be more easily tampered with than an entire program.

***5.*** As to Claims 31 and 41: The simulating and the rendering occur simultaneously such that the actions and the simulated outcome are rendered in real time (motion calculations and ball display done iteratively screen by screen, Fig. 8).

***6.*** As to Claims 32 and 42: The simulating occurs prior to the rendering such that the simulated outcome is selected prior to being rendered (non-mathematical means of generating simulated tumble of balls, by obtaining next symbol positions from memory instead of calculating them mathematically, 8:37-50). This is analogous to the previously cited Siekierski, et al. in 4,527,798 A using a random number generator to select a random previously recorded horse race (Col. 6, Col. 13, Line 60 to Col. 15, Line 10).

***7.*** As to Claims 33 and 43: ‘007 further teaches randomly modifying the simulation rule data such that pre-defined organizations of the physical objects provide different ones of the simulated outcomes (non-mathematical means of generating simulated

tumble of balls, by obtaining next symbol positions from memory instead of calculating them mathematically, 8:37-50). This is analogous to the previously cited Siekierski, et al. in 4,527,798 A using a random number generator to select a random previously recorded horse race (Col. 6, Col. 13, Line 60 to Col. 15, Line 10).

***8.*** As to Claims 34 and 44: ‘007 further teaches modifying the simulation rule data by bounds to control the possible simulated outcomes (7:42-60, adjusting play percentage variables to comply with statutorily required payouts).

***9.*** As to Claims 38 and 38: The simulating commences from a randomly chosen initial condition (balls allowed to tumble for random time period (7:5-11). The examiner notes that the claim language does not cite a random initial arrangement of cards in a deck to be shuffled, a random physical arrangement of balls to be tumbled as in the ball-tumbling game of ‘007, or a random number generator seed being randomly selected such as based on ambient weather, thermal noise, etc.

***10.*** As to Claims 39 and 49: The simulating includes influencing the actions with a random variable (numbers randomly generated, 7:24-40, the examiner notes that the claim language does not cite a random number generator seed being randomly selected such as based on ambient weather, thermal noise, etc.).

***11.*** As to Claim 50: Claim 50 is rejected for similar reasons to Claim 30, in that it is a computer-readable medium drawn to the method of Claim 30. The examiner notes that Claim 50 is a separate independent claim as it is drawn to a separate statutory class of subject matter.

12. Claims 36, 37, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘007 and ‘467 in view of Morris, et al. (U.S. patent 5,324,035 A).

***13.*** As to Claims 37 and 47: The combination of ‘007 and ‘467 discloses all of the limitations of Claims 37 and 47, but lacks specificity as to the simulated outcome being selected prior to being rendered. ‘007 teaches the simulating and the rendering occurring in part simultaneously (Fig. 8). ‘035, however, teaches the simulated outcome being selected prior to being rendered (Abst.; 2:35-3:27, pools of predetermined outcomes for video lottery terminals). It would have been obvious to one of ordinary skill in the art to have applied the predetermined pools of ‘035 (which is disclosed in its main embodiment to video lottery systems) to combination of ‘007 and ‘467. 5:35-40 of ‘035 describes the system being applied to various other types of lottery games besides video lotteries, such as slots, craps, and roulette. Each of these games involves the random motion of a physical object (random stopping of slot reels, dice, or roulette wheels, respectively), analogous to 007's random stopping of tumbling lottery balls; this demonstrates the applicability of '035's predetermined pools of outcomes to gambling games based on random motion of physical objects. The advantage of this modification would be to provide central determination of the lottery numbers (’035, Abst.) to lend security to the gaming device, and to allow use of the video lottery system in jurisdictions which do not allow the use of random number generators within the gaming devices themselves.

***14.*** As to Claims 36 and 46: ‘035 further teaches the simulation rule data including common rule data applicable to different types of wagering games such that the 3D

processor need not be updated with the common rule data for the different types of wagering games (the pools of outcomes can be applied to any number of types of games, 5:35-40).

15. Claims 35 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘007, ‘467, and ‘035 in view of Vincent (U.S. pre-grant publication 2004/0015953 A1, application 09/811,977).

***16.*** As to Claims 35 and 45: The combination of ‘007, ‘467, and ‘035 teaches all of the limitations of Claim 35, but lacks specificity as to the simulating and the rendering being performed by a 3D processor that receives the simulation rule data and the physical object data from a central processor. Vincent, however, in U.S. pre-grant publication 2004/0015953 A1, teaches three-dimensional graphics software being updated over a network when a new version is available. It would have been obvious to one of ordinary skill in the art to have made this modification to the combination of '007, ‘467, and '035. The suggestion for 3-D graphics can be found in the previously cited “Physics for Game Developers” (“3D Particle Kinematics,” Pages 33 to 43, by David M. Bourg, 2002 O’Reilly and Associates, Inc., hereafter referred to as “Physics”, entered as non-patent literature by the examiner on Nov. 1st, 2006) which elaborates on the mathematical models already taught by ‘007 (7:64-8:34). The advantage of the 3-D graphics would be to make the visual display more realistic as actual lottery balls used in real life are three—dimensional objects. This also takes advantage of the network of '035 which is already used to distribute the gaming result pools to the client terminals.

This modification would have the advantage and effect of allowing the latest software to be downloaded to the gaming terminals as soon as it becomes available. This would have the further advantage of allowing the client terminals to play any of the games listed in '035 (5:35-40, blackjack, poker, slots, roulette, etc.) without being manually reconfigured and to adapt to changing gaming regulations as soon as they take effect.

***Response to Arguments***

***17.*** Applicant's arguments filed 03-17-2009 have been fully considered but they are not persuasive. ‘007 teaches that the desired outcome probability distribution is readily apparent and discernible to a player of the wagering game. The examiner points to the four columns in Fig. 1, each containing eleven balls respectively marked 0 to 9 and "Slotto" (Fig. 1, 3:52-54, 4:16-28). The probability distribution is thus readily apparent and discernible to the player since each ball in a respective column will have a one-in-eleven chance of being selected. ‘467 teaches the simulation object data and the physical object data being selected to yield a pre-selected outcome probability distribution of a plurality of possible simulated outcomes. This can be done a couple of different ways. Fig. 4 discusses defining the physical parameters of the model; running a Monte Carlo test to determine the probability of each outcome; and evaluating if the distribution of outcomes is satisfactory, and if not altering the model (7:24-44). Fig. 6 discusses defining the physical parameters of the model; creating a list of allowed initial conditions, and determining via the model the outcome for each set of initial conditions; and evaluating if the distribution of outcomes is satisfactory, and if not altering the

model and/or the list of initial conditions (8:26-58). The physical object data are taught in (6:3-12). The simulation rule data are taught in the simulation of quantities such as inclination of play field, friction, shape, size, resiliency, trajectory, velocity, spin, etc. (5:17-42). The teachings of ‘467 would have allowed one of ordinary skill in the art at the time of invention to develop a physical model using an iterative process until an even one-on-eleven distribution was obtained for a column of lottery balls such as depicted in ‘007 (Fig. 1). 467 teaches a predetermined probability distribution of the plurality of possible simulated outcomes being defined by the interaction of the physical object data and the simulation rule data (Abst.). Fig. 4, step 52 and Fig. 6, step 72 would be evaluated using Monte Carlo analysis for the following reasons: because of the possibility of trillions (6:17) or more possible routes for the ball to take, a Monte Carlo analysis is done of all the possible outcomes to assign them a probability (Col. 6) to relieve the burden of evaluating all of the possibilities during game play which would slow down the game. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the predetermined distribution of '467 to the game of ‘007. '467 teaches the possibility of doing these calculations for games involving balls colliding with each other (15:34-60), which is exactly the type of game of ‘007 (Abst.). Additionally, the selection of simulation rule data and physical object data to determine a desired probability distribution ('467, Figs. 4 and 6) can be used for more complex analyses such as those of a pachinko game (Fig. 8, 9:44-63), which does not have a readily discernible probability distribution such as the lottery ball tubes of ‘007. The only intuitive aspects of the distribution of the pachinko game of ‘467 (Fig. 8) is that

the ball will be more likely to come down in the left of the play field, with decreasing probabilities the further away from the left side the distance is. The ball of ‘467 Fig. 8 is more likely to be on the left since it is shot from the right of the play field to the left. This intuitive aspect of the distribution is borne out in '467 Table 14 (Col. 13) which lists the outcomes as slot 4 (59%), slot 1 (35%), slot 2 (5%), and slot 3 (1%). Since the method of '467 can be used for a more complex probability distribution such as pachinko, it would certainly be simple to use it do develop a readily discernible outcome such as the one-in-eleven distribution of the lottery ball columns (Fig. 1) of '007. This obviousness would also apply to even distributions such as roulette (1 in 38, or 1 to 36, 0, and 00) and dice (1 in 6). ‘467 would also have the advantage of using the simulation rule data and physical object data to select the random outcome instead of using an RNG as in '007 (Fig. 5, step 61, select initial conditions which would be run within the limits determined in steps 51, 52, and 53 of Fig. 4; step 62, run the physical model until the game ends; 63 evaluate outcome; 64 lookup outcome; 65 award player; similar steps in Fig. 7). The advantage of this modification would be to make the simulation more realistic by using a simulation of the actual motion instead of an RNG to generate the random result (each collision of pachinko ball in Figs. 11 & 13 being a separate random event as the pachinko ball goes down the field of play, ‘467) instead of merely selecting a random number to determine the outcome of the simulation as is done in '007 (5:20-24). This method of determining paytables by using a Monte Carlo analysis of all possible game outcomes and determining the random outcome using the interaction of physical object data and simulation rule data would also serve to create a verifiable

mathematical model which could be independently verified by state gaming authorities or their designated contractors to ensure the fairness of the game. Eliminating the RNG would also serve to deter tampering with the gaming package since the random outcome would be organically determined by the game program as a whole instead of by a discrete RNG (whether in software or firmware), as a simple, stand-alone RNG would be more easily tampered with than an entire program.

***18.*** Regarding the interview on 06-26-2009: The examiner had consulted with SPE Peter Vo on 06-25-2009. We believed for the claims to be allowable, they had to at least be drawn particularly to the roulette embodiment of the specification. The applicants had stated in a previous interview that they were not drawing the claims to their horse race embodiment anymore, so the only embodiment left is the roulette embodiment. Further search and consideration before the last action had led the examiner to believe that the limitation of a probability distribution apparent to the player did not get around Travis ('007), as each column has 11 bingo balls, each with an even chance of being selected. The examiner believes that it also did not get around Fentz (5,775,993 A) which teaches a roulette game with pockets 1-36, 0, and 00, each pocket with a one-in-thirty-eight chance of being selected. The applicant stated that the simulation rule data and physical object data were selected to get a desired probability distribution. The applicants did not want to narrow the claims down to read specifically on the roulette embodiment. The examiner believed that if the roulette wheel and ball were accurately physically modelled that the resulting probability distribution would be the 1-in-38 probability distribution anyway, obviating any attempt to get a desired

probability distribution. The applicants wanted to get broader protection for the random result being a result of the object interactions using the simulation rule data and the physical object data, but the examiner believed that '467 illustrated such interactions in Fig. 5 & 7:45-67. This passage of '467 is not using Monte Carlo analysis of a cross-section of all possible to results to obtain a likely probability distribution of all possible results to build a paytable; this passage of '467 is using object interactions of physical object data and physical rule data to obtain a random result and then comparing the random result to the paytable to see what should be awarded to the player. The examiner believes he made every effort to apply the '467 secondary reference to the '007 base reference without impermissible hindsight. Both references involve jumbling balls to obtain random results for gaming purposes; '007 in a lottery application, and '467 (in the main embodiment) in a pachinko application. The examiner believes '467 does suggest trying to obtain a desired probability distribution as 53 (Fig. 4, 7:24-44) and 73 (Fig. 6, 8:44-58) ask if the obtained probability distribution is satisfactory, and, if not, altering the model or the list of initial conditions. The applicants did not want to narrow down the claim language to specify, for example, a mathematical relationship between the physical object data and simulation rule data, on the one hand, and the desired probability distribution, on the other hand. The applicants specify such relationships for roulette in Figs. 7-9 and Paras. 40-43, 48-59 (published as 2004/0053686 A1). The applicants also did not want to incorporate the motion capture data into the claims. The applicants believed the Monte Carlo analysis of '467 taught away from the claims, but the examiner was not relying on the Monte Carlo analysis in

the rejection. '467 uses Monte Carlo analysis to analyze a cross-section of all physical outcomes to arrive at a probability distribution of all probability outcomes. The applicants believed that the physical models did not have to be perfect (as in perfect 1-in-38 chance), as the actual roulette wheel and balls in a physical roulette game were not perfect. The examiner still believed a sufficiently accurately modelled roulette game would arrive at a 1-in-38 chance close enough to be the desired probability outcome and be certified by gaming authorities, just like a physical roulette game is certified for casino play. The examiner did not believe the applicants could claim the attempt to select the physical object data and simulation rule data to arrive at a desired probability distribution had a patentable point of non-obviousness for the reason outlined in the previous sentence, and also the applicants did not provide in the specification a disclosure of such an attempt done for a game (such as pachinko, for example), in which the probability distribution is not readily apparent to the player. The examiner respectfully disagrees with the applicants as to the claims' condition for allowance.

***Citation of Pertinent Prior Art***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Heck, et al. in U.S. patent 5,301,118 A teach Monte Carlo analysis generally.

### *Conclusion*

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

21. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew D. Hoel whose telephone number is (571) 272-5961. The examiner can normally be reached on Mon. to Fri., 8:00 A.M. to 4:30 P.M.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew D. Hoel
Patent Examiner
AU 3714

/Dmitry Suhol/
Supervisory Patent Examiner, Art Unit 3714

/M. D. H./
Examiner, Art Unit 3714